UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,508	05/11/2004	Chih-Chuan Cheng	11818-US-PA	3507

31561	7590	08/07/2006

JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE
7 FLOOR-1, NO. 100
ROOSEVELT ROAD, SECTION 2
TAIPEI,   100
TAIWAN

EXAMINER
CONNOLLY, MARK A

ART UNIT	PAPER NUMBER
2115	

DATE MAILED: 08/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 May 2004*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 May 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

        1.☒ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   Claims 1-8 have been presented for examination.

Drawings

2.   The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "translation table, comprising a plurality of layers, each layer defining a front-end bus operation frequency and a corresponding range of a central processing usage rate" wherein the interval between the layers is one million hertz (see claims 1 and 4 and 112 rejection below) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4.   Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In particular, the claim states that each of the layers defines a set of a plurality of front-end bus operation frequencies (i.e. multiple front-end bus frequencies for each individual CUP usage rate). Both the specification and drawings only teach a single operation frequency for each layer [see ¶0010 and figs. 1B and 3]. If each layer does comprise a plurality of front-end bus operation frequencies, as suggested by the claims, then it is unclear as to which single frequency of the plurality of frequencies would be selected for adjusting the front-end bus frequency and how exactly that selection is made.

For examination purposes, the above claim language has been interpreted as "providing a translation table, comprising a plurality of layers, each layer defining a front-end bus operation frequency and a corresponding range of a central processing usage rate."

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 1 and 4-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fang

US Pat No 6907535 in view of Oh US Pat No 7069463.

7.   Referring to claim 1, Fang teaches the method for dynamically adjusting frequency of a

CPU comprising:

> a.   providing a translation table, comprising a plurality of layers, each layer defining
>
> a front-end bus operation frequency and a corresponding central processing usage rate
>
> [col. 5 lines 24-30]. Each frequency/voltage vs. CPU load table entry is interpreted as a
>
> layer.
>
> b.   obtaining a current usage rate of the central processing unit [col. 4 lines 31-38].
>
> c.   comparing the current usage rate with entries in the translation table and adjusting
>
> one of the front-end frequencies [col. 4 lines 31-38].

Although Fang teaches the claimed invention substantially above, it is not explicitly

taught that each layer of the table corresponds to a range of CPU usage rates. It is well known in

the art that tables can be constructed and formatted in a plurality of different ways for a given

environment. Oh teaches that a table for throttling a bus clock frequency, which comprises a

plurality of layers wherein each layer comprises a range of CPU loads [abstract and figs. 7 and

8]. It would have been obvious to construct the table in Fang utilizing the teachings of Oh

because it provides a means to adjust the front-end bus frequency in accordance with CPU load

while keeping the size of the table to a minimum.

8.   Referring to claim 4, as stated above, it is well known in the art that tables can be

constructed and formatted in a plurality of different ways. Furthermore, it should be apparent

that as the range of CPU usages decreases/increases for each layer, the control over the front-end

bus frequency would either become tighter/looser. It would have been obvious by design choice

to adjust the CPU usage range for each layer to tightly control bus frequency so that the

frequency difference between each layer is only 1 MHz because this would provide very tight

control thus maximizing power savings.

9.   Claims 5 and 6, Fang teaches measuring CPU usage rate using operating system software

[col. 4 lines 15-17].

10.   Referring to claims 7 and 8, Fang teaches adjusting the front-end bus in accordance with

a CPU usage rate [abstract and col. 1 lines 23-38]. Therefore, if the CPU usage increases or

decreases, the front-end bus frequency increases and decreases accordingly.

11.   Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fang and

Oh as applied to claims 1 and 4-8 above, and further in view of Pillay et al. [Pillay] US Pat No

7000138.

12.   Referring to claim 2, Fang teaches establishing a plurality of layers according to the

clocking range, wherein the translation table is defined for the front-end operation frequency of

the CPU vs. a usage rate [col. 5 lines 24-30]. Furthermore, although Fang teaches adjusting the

front-end bus frequency, it is not explicitly taught that the frequency is adjusted progressively.

Pillay teaches adjusting a clock frequency in small steps in response to a change in processor

load [col. 11 lines 17-37]. It would have been obvious to one of ordinary skill in the art to

progressively adjust the front-end bus frequency taught in Fang because it would help ensure

stability of the system as taught by Pillay.

13.   Referring to claim 3, Oh teaches throttling a bus clock when powered by a battery and

resetting the clock throttling when connected to AC power [col. 5 line 32- col. 6 line 10].

Conclusion

14.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Mark Connolly whose telephone number is (571) 272-3666. The

examiner can normally be reached on M-F 8AM-5PM (except every first Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Thomas C. Lee can be reached on (571) 272-3667. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Mark Connolly
Examiner
Art Unit 2115

mc
August 2, 2006

THOMAS LEE
SUPERVISORY PATENT
TECHNOLOGY C